ULITSKIY, Iosif Ioakhimovich; KIREYEVA, Sof'ya Vasil'yevna; FANSTIL', Irina Valentinovna; SURYGINA, E., red.; LEUSHCHENKO, N., tekhn. red.

[Prestress losses from creep and shrinkage of the concrete in reinforced concrete elements]Poteri predvaritel'nogo napriazheniia ot polzuchesti i usadki betona v zhelezobetonnykh konstruktsiiakh. Kiev, Gosstroiizdat USSR, 1962. 206 p. (MIRA 16:2)

(Prestressed concrete—Testing)

KIREYEVA, S.V., kand.tekhn.nauk

Taking into account the rate factor in the determination of the calculated degrees of the characteristics of creep and shrinkage deformation of concrete. Stroi.konstr. no.1: 145-152 '65. (MIRA 19:1)

1. Nauchno-issledovatel'skiy institut stroitel'nykh konstruktsiy Gosstroya SSSR, Kiyev.

KIREYEVA, S.V., kand.tekhn.nauk

Calculation of rectangular slabs of varying thickness. Stroi. konstr. no.2:67-77 '65. (MIRA 18:12)

1. Nauchno-issledovatel'skiy institut stroitel'nykh konstruktsiy Gosstroya SSSR, Kiyev.

ULITSKIY, Iosif Ioakhimovich, doktor tekhn. nauk, prof.;
KIREYEVA, Sof'ya Vasil'yevna, kand. tekhn. nauk;
KALASHEVSKAYA, I.K., red.

[Contraction and creep of concrete prepared by plants]
Usadka i polzuchest' betonov zavodskogo izgotovleniia.
Kiev, Budivel'nyk, 1965. 106 p. (MIRA 18:5)

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000722620004-8"

IVANOV, Nikolay Aleksandrovich; KIREYEVA, T., red.; SHAYKOVA, N., tekhn. red.

[Protection of the underwater part of vessels with mastic paint IaN-7A] Zashchita podvodnoi chasti sudov mastichnoi kraskoi IaN-7A. Vladivostok, Primorskoe knizhnoe izd-vo, 1962. 52 p. (MIRA 17:3)

POPOV, Vladimir Ivanovich; KIREYEVA, T., red.

[Rapid working miners] Skoroprokhodchiki. Vladivostok, Dal'nevostochnoe knizhnoe izd-vo, 1964. 59 p. (MIRA 18:3)

LYASHCHENKO, Fedor Anan'yevich; GALITSKIY, Dmitriy Pavlovich; KRAVCHENKO, Valeriy Andreyevich; KIREYEVA, T., red.

[Technology of logging operations in the Maritime Territory ensuring the preservation of young growth] Primorskaia tekhnologiia lesosechnykh rabot, obespechivaiushchaia sokhranenie podrosta i molodniaka. Vladivostok, Dal'nevostochnoe knizhnoe izd-vo, 1964. 15 p. (MIRA 18:5)

KIREYEVA, V.F.

Protein content of the blood serum and vascular permeability following poisoning by bee venom. Nauch. dokl. vys. shkoly; biol. nauki no. 1:90-94 '61. (MIRA 14:2)

1. Rekomendovana kafedroy fiziologii cheloveka i zhivotnykh Gor'kovskogo gosudarstvennogo universiteta im. N.I. Lobachevskogo.
(BEE VENOM—PHYSIOLOGICAL EFFECT) (CAPILLARIES—PERMEABILITY)

MACHINSKAYA, I.V.; VESELOVSKAYA, T.K.; KIREYEVA, V.G.

Some properties of enol acetates. Part 12: β-Phenoxylation of aldehydes by the reaction of their bromenol acetates with sodium phenolate. Zhur. org. khim. 1 no. 12:2154-2156 D '65 (MIRA 19:1)

1. Moskovskiy khimiko-tekhnologicheskiy institut imeni Mendeleyeva. Submitted November 16, 1964.

KIREYEVA, V.N., assistent

Late results o* treating pulpitis by the amputation and extirpation methods. Trud, KGMI no.10:411-414 '63. (MIRA 18:1)

1. Iz kafedry terapevticheskoy stomatologii (zav. kafedroy dotsent T.T.Shkolyar) Kalininskogo gosudarstvennogo meditsinskogo instituta.

KIREYEVA, V.M.

MATOSHIN, V.M.; KIREYEVA, V.M.

Role of medical and sanitation detachments in the control of morbidity in miners. Sov.zdrav. 16 no.7:15-19 Jl '57. (MIRA 10:11)

1. Iz mediko-sanitarnoy chasti shakhty "Mushketovskaya-Vertikal'naya" tresta "Vudennovugol'" (glavnyy vrach N.I.Bahseyeva)
(MINING,
morbidity control in miners (Rus))

KIREYEVA, V.S.

State of amino-acid nitrogen in the blood of children with diabetes mellitus. Pediatriia 42 no.3:72-76 Mr'63
(MIRA 17:2)

1. Iz kafedry detskikh bolezney (zav. - prof. M.M.Bubnova) Lechebnogo fakul'teta II Moskovskogo meditsinskogo instituta imeni N.I.Pirogova.

BODNYA, M.D.; KIREYEVA, V.V.; BARANOVSKAYA, G.M.; SEMILETKOVA, I.N.

Grinding of zinc whites in a ball mill in a solvent medium. Lakokras. mat. i ikh prim. no.3:62-63 '61. (MIRA 14:6)

1. Tashkentskiy lakokrasochnyy zavod.
(Pigments)
(Zinc oxide)

KIREYEVA, YE. A.

15-57-2-1259

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 2, pp 7-8 (USSR)

AUTHOR: Kireyeva, Ye. A.

TITLE: The Lower Limit of the Moscow Stage (K voprosu o nizhney granitse moskovskogo yarusa)

PERIODICAL: Uch. zap. Saratovsk. un-ta, 1955, Vol 46, pp 125-128

ABSTRACT: In considering the section of the Middle Carboniferous deposits of the Kel'tmenskiy terrace (based on the Kel'tmentsy drill hole of southern Pritiman'ye), the author draws a line between the Bashkiriya and Moscow stages very considerably lower than does N. N. Rostovtsev (Sovetskaya geologiya, 1948, Nr 28), D. M. Rauzer-Chernousov (Izv. AN SSSR, Ser. geol., 1949, Nr 2) and G. I. Teodorovich /Byul. Mosk. o-va ispytateley prirody, Otd. geol., 1952, 27 (6)/. He includes the pre-Netselov strata (the sub-Vereyskiy horizon of the Bashkiriya stage according to other investigators) in the Vereyskiy horizon on the basis of a more abrupt foraminifera

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15-57-2-1259

The Lower Limit of the Moskovkiy Stage (Cont.)

change below this horizon. This change is substantiated by a quantitative calculation of the species, appearing in the sub-Vereyskiy horizon (or, according to the author, in the lower subhorizon of the Vereyskiy horizon), by the total number of species in neighboring stratigraphical subdivisions, and by the qualitative change of fossils (by the emergence of representatives of two new species) on the lime accepted by the author. In the Kel'tmentsy terrace section, this line is characterized by the replacement of the light limestones by a block of variegated limestones with streakes of red clays, brick-red silicified limestone, and red flint nodules.

Card 2/2 D. M. R. - Ch.

KIREYEVA, Ye.A.

New manual on general geology ("General geology" by G.P. Gorshkov, A.F. IAkushova. Reviewed by E.A. Kireeva). Izv. vys. ucheb. zav.; geol. i razv. 2 no.7:122-124 Jl '59 (MIRA 13:3)

1. Saratovskiy gosudarstvennyy universitet.
(Geology--Textbooks) (Gorshkov, G.P.)
(IAkushova, A.F.)

KIREYEVA, Ye.A.

Experience in using "ecogenetic" data for the detailed stratigraphic subdivision of sedimentary rocks. Uch.zap.SGU 65:13-19 '59. (MIRA 16:1)

(Geology, Stratigraphic)
(Rocks, Sedimentary)

MIKHEYEV, D.P.; KIREYEVA, Ye.N.; SMIRNOV, B.K., otv.red.; PEVZNER, A.S., zav.red.izd-va; SHERSTNEVA, N.V., tekhn.red.

[Uniform time and pay standards for construction, assembly, and repair operations in 1960] Edinye normy i rastsenki na stroitel'nye, montazhnye i remontno-stroitel'nye raboty, 1960 g. Moskva, Gos.izd-vo lit-ry po stroit., arkhit. i stroit. materialam. Sbornik 9. [Interior sanitary-engineering installations] Vnutrennie sanitarno-tekhnicheskie raboty. No.1. [Heating, water supply, sewer system, and gas supply] Otoplenie, vodoprovod, kanalizatsiia i gazosnabzhenie. 1960. 63 p. (MIRA 13:6)

1. Russia (1923- U.S.S.R.) Gosudarstvennyy komitet po delam stroitel'stva. 2. TSentral'noye normativno-issledovatel'skoye byuro (TsNIB) Glavmosstroya (for Kireyeva).
(Wages) (Sanitary engineering) (Gas distribution)

S/137/62/000/006/145/163
A057/A101

AUTHORS: Vinogradov, Yu. M., Kireyeva, Z. P.

TITLE: Increase of the resistance to wear of surface layers of bearings by methods of thermo-chemical treatment

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 6, 1962, 105, abstract 6I666 (V sb. "Kachestvo poverkhnosti detaley mashin Sb. 5". Moscow, AN SSSR, 1961, 138 - 145)

TEXT: The most effective method for the increase of antifriction properties of a metal was sought for. Tests were carried out on friction machines, imitating the work of a bearing under real conditions. The thermo-chemical treatment of the ОЦС 6-6-3 (OTs6-6-3) bronze and pig iron was carried out by the following technology: 1) sulfurization in a salt bath of the type NIIKhIMMASh 2/6 no. 1 at 560°C during 1 hr; a metal layer enriched with FeS is formed on the surface; 2) selenization in a salt bath containing 3 parts of Se and 6 parts of Na-cyanide per 100 parts of the melt (55% Na_2SO_4 and 45% KCl) at 560°C; the surface of the metal is enriched with FeSe; 3) chlorination in gaseous Cl_2 at 220°C during 15 minutes; the surface layer of the metal is en-

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riched with $FeCl_2$. It was determined that an increase of the resistance to wear of bearings can be effected by covering their surface with selenides and chlorides. Sulfurized, selenidized, and chlorinated cast iron can be used as a substitute for non-ferrous metals in service with mineral oil lubrication. Bearings from 18-8 steel can be used after sulfurization in service in aqueous acid solutions, since sulfurized Cr-Ni-steel does not change its corrosion resistance. Of the most practical interest is sulfurization. There are 9 references.

A. Babayeva

[Abstracter's note: Complete translation]

S/123/62/000/019/001/010
A006/A101

AUTHORS: Vinogradov, Yu. M., Kireyeva, Z. P.

TITLE: Improved wear resistance of surface layers of bearings by chemical and thermal treatment

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 19, 1962, 21 - 22, abstract 19B110 (In collection: "Kachestvo poverkhnosti detaley mashin, v. 5", M., AN SSSR, 1961, 138 - 145)

TEXT: The authors studied the effect of chemical processing and heat treatment methods (sulfonation, selenization, chlorination) upon the wear resistance of surface layers of cast-iron slide bearings. The investigation was made in a laboratory with СЧ 18-36 (SCh-18-36) cast-iron, subjected to sulfonation in a "NIIKHIMMASh 2/6 no. 1" salt bath, at 560°C; selenization at the same temperature in a salt bath, containing a mixture of selenium, sodium cyanide and others; and chlorination in gaseous chlorine at 220°C. Tests on a 4-roll machine have shown that the studied chemical- and heat-treatment methods increased considerably the antigalling properties of cast-iron as compared

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A006/A101

Improved wear resistance of surface layers of...

with non-treated cast-iron or bronze ОЦС 6-6-3 (OTsS 6-6-3); at heavy loads (100 - 200 kg) the highest effect is obtained by sulfonation and selenization, and the least effect by chlorination. Simultaneously it is confirmed that the chemical and thermal treatment reduces considerably the friction coefficient of cast iron which differs only slightly from that of bronze. Wearing tests on an Amsler machine were carried out in a wide range of specific pressure (50 - 120 kg/cm^2) and speed (200 - 500 rpm). The tests show that the chemical and thermal treatment increases wear resistance of friction pairs only to a certain limit. The stricter the friction conditions, the more positive is the effect of the chemical and thermal treatment. The range of the positive effect of the investigated chemico-thermal treatment upon the wear-resistance is wide; therefore it is actually possible to employ these methods for bearings. This was confirmed by tests on the ЛТС-5 (LTS-5) machine at 300 - 1000° rpm. These experiments prove the possibility of using, within certain limits, mineral oil-greased cast-iron bearings which had been subjected to chemico-thermal treatment, instead of non--ferrous metal bearings. The highest practical interest for raising the wear resistance is offered by sulfonation. However, in individual cases selenization is

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A006/A101

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recommended. The corrosion resistance of X18H9 (Kh18N9) type stainless steel in nitric, phosphoric and acetic acid is not reduced after sulfonation, and anti-friction properties are improved. Therefore the use of sulfonated corrosion-resistant materials is possible for bearings operating in aggressive media.

L. Litvinenko

[Abstracter's note: Complete translation]

Card 3/3

S/883/62/000/000/004/020
E194/E155

AUTHORS: Vinogradov, Yu.M., and Kireyeva, Z.P.

TITLE: Methods of testing and assessing the anti-seizure properties of wear-resistant surface coatings

SOURCE: Metody ispytaniya na iznashivaniye; trudy soveshchaniya sostoyavshegosya 7-10 dek. 1960. Ed by. M.M. Khrushchov. Moscow, Izd-vo AN SSSR, 1962. 48-56

TEXT: Standardised methods of assessing the wear-resistant properties of treated metal surfaces are required, because new treatments are coming into use. Although the procedures developed for testing extreme-pressure lubricants might be applied, the anti-friction mechanism is different in the two cases. Three-contact machines are widely used for testing E.P. lubricants, notably the four-ball machine abroad and four-roller machine in the USSR. Neither the machines themselves nor the test procedures and methods of assessment have been standardised. It is wiser to use several methods of assessment. Comparative tests were made on a ЛТС-4 (LTS-4) four-roller machine and a Shell-Seta four-ball machine, and also on an Amsler friction machine and a type ЛТС-5 (LTS-5) bearing test machine. The steel specimens were given the following surface treatment: sulphiding; "seleniding"; sulpho-cyaniding; and chloriding. As there was no clear evidence of seizure in the four-roller machine, it was difficult to use the seizure load as the criterion. The size of wear scar for a given load is a useful method of assessment. Frictional torque, which can be accurately measured in this machine, is another useful criterion. In the Shell-Seta four-ball machine the surface treatment had little influence on the wear scar diameter at light loads, but the differences showed up at heavy loads. Once again the seizure load was not clear. Bearing in mind that the rollers and balls were made of different materials there is satisfactory agreement between tests in the four-cylinder and the four-ball machines. Friction machine KT-2 (KT-2) differs in principle, in that the property measured is the oil temperature at which stick-slip motion commences. This corresponds to the temperature at which the oil film is desorbed from the metal surface. In this machine the presence of lubricant masked the differences between the different surface treatments, which could only be revealed in the absence of lubricant. Long-term tests are carried out on friction machine LTS-5 and the Amsler machine. In the LTS-5 machine surface-treated cast iron bearings were tested and coefficient of friction measured as function of load at different speeds. In the Amsler machine the wear of a steel roller and a cast iron bush lubricated with spindle oil are measured every three hours. The differences in surface treatment showed up particularly clearly at high pressures. It is concluded that surface treatments which give good results in three-contact friction machines are also effective in the LTS-5 machine at high specific pressures. Three-contact friction machines are recommended for tests under severe conditions, particularly when the main object of the surface treatment is to prevent scoring. Either four-ball or four-roller machines may be used, but in the latter the preparation of the surface-treated specimens is simpler. It is recommended to assess the surface treatments by the ratio of wear scar diameter at a given load, the seizure load if it is clearly expressed, and the coefficient of friction. It is urgently necessary to develop and manufacture standard three-contact friction machines, preferably

Methods of testing and assessing... S/883/62/000/000/004/020
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those which could use either cylinders or balls.
There are 4 figures and 2 tables.

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VINOGRADOV, Yu.M.; KIREYEVA, Z.P.

Using the methods of chemical heat treatment for increasing the wear resistance of surface layers of bearings. Trudy Sem.po kach.poverkh. no.5:138-145 '61. (MIRA 15:10)
(Bearings (Machinery)) (Case hadering)

S/277/63/000/004/001/013
A004/A127

AUTHORS: Vasil'yev, I.V., Kireyeva, Z.P.

TITLE: Selection of materials for face seals operating in 25% sulfuric acid solution

PERIODICAL: Referativnyy zhurnal, Otdel'nyy vypusk. 48. Mashinostroitel'nyye materialy, konstruktsii i raschet detaley mashin, no. 4, 1963, 2, abstract 4.48.3. (Tr. Vses. n.-i. i konstrukt. in-t khim. mashinostr., 1961, no. 37, 122 - 130)

TEXT: The steel grades Х18Н12М3Т (Kh18N12M3T) and Х23Н23М3Д3 (Kh23N23M3D3), Castalloy D, ПК-0 (PK-0) carbon graphite, 15Д (15D) carbon graphite, 15Е (15Ye) graphite impregnated with resin, were tested for friction and wear in a 25% H_2SO_4 solution for choosing material for face seals. The best friction couple with regard to wear resistance and magnitude of friction coefficient is Kh18N12M3T grade steel and PK-C carbon graphite impregnated with resin. In choosing metals for friction couples operating in a 25% H_2SO_4 solution it is necessary to pay special attention to their corrosion resistance, since all the other metal properties (hardness, workhardening

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A004/A127

Selection of materials for face seals...

properties) at the given conditions affect the steel wear processes to a lesser extent.

[Abstracter's note: Complete translation.]

Card 2/2

KIREYEVSKAYA, K., uchenyy sekretar' sektsii mekhovoy promyshlennosti.

Activities of the Technical Council. Leg.prom. 14 no.9:54-55 S '54.
(Knit goods industry) (Fur) (MLRA 7:9)

KIREYEVSKIY, P. D.

We mechanized the wire binding of ties. Put' i put. khoz. 6 no.8:36-37 '62. (MIRA 15:10)

1. Zamestitel' nachal'nika zheleznodorozhnogo upravleniya "Kamgesstroy", g. Perm'.

(Railroads—Ties)

KIREYA, G.F.

Distribution of gas flow during the blowing of electrolinked channels. Trudy VNIIPodzemgaza no.12:52-56 '64. (MIRA 18:9)

1. Laboratoriya teplotekhniki i energetiki Vsesoyuznogo nauchno-issledovatel'skogo instituta podzemnoy gazifikatsii ugley.

PANICH, R. M.; KIREYTSEV, V. V.; SANDOMIRSKIY, D. M.; VOYUTSKIY, S. S.

Properties of latexes obtained with the use of nonionic stabilizers. Part 1: Properties of polychloroprene latexes as dependent on the type of stabilizer, pH of the medium, and the presence of electrolytes. Koll. zhur. 24 no.6:733-737 N-D '62. (MIRA 16:1)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni Lomonosova.

(Chloroprene) (Colloids)

KIREZ, M.; VOINESCU, V.; HENDLER, E.

Contributions to the synthesis of β-alanine. p.78.

REVISTA DE CHIMIE. Bucuresti, Rumania. Vol. 10, no. 2, February 1959.

Monthly List of East European Accessions (EEAI), LC. Vol. 8, no. 9, Sept. 1959.
Uncl.

KIRGETOV, V.I., Cand Phys-Math Sci--(diss) "Certain problems of the mechanics of non-holonomial systems." Mos, [illegible]. [illegible] pp (Mos Order of Lenin and Order of Labor Red Banner St U im M.V.Lomonosov). 150 copies (KL, 17-5?, 130)

16(1)

AUTHOR: Kirgetov, V.I. (Moscow) SOV/40-22-4-9/26

TITLE: On the Commutativity Relations in Mechanics (O perestanovochnykh sootnosheniyakh v mekhanike)

PERIODICAL: Prikladnaya matematika i mekhanika, 1958, Vol 22, Nr 4, pp 490 - 498 (USSR)

ABSTRACT: Directly after the time that Hertz [Ref 1] detected the existence of nonholonomeous couplings in mechanic systems, it was tried to transfer the relations of mechanics valid for holonomeous systems to nonholonomeous systems. The validity of the Hamilton principle for nonholonomeous systems is of particular interest. While Hertz doubted the validity of the principle for nonholonomeous systems, Appell was able to confirm this validity. From a consideration of the deduction of the Hamilton principle it follows that the problem of validity of the Hamilton principle for nonholonomeous systems is connected with the existence of the commutativity relations

$$d\delta x = \delta dx \quad ; \quad d\delta y = \delta dy \quad ; \quad d\delta z = \delta dz$$

These relations are to hold for all coordinates of the system.

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In the present paper now the question of the existence of the commutativity relation is investigated from the general point of view, and two theorems are proved which hold for general systems between the coordinates of which there are valid linear differential relations of the form :

$$(1.1) \qquad q'_{\vartheta} + \sum_{\tau=1}^{k-m} a_{\vartheta, m+\tau} q'_{m+\tau} + a_{\vartheta} = 0 \quad (\vartheta = 1,\ldots,m)$$

It is shown that for arbitrary kinematically admissible motions $q_\nu = \varphi_\nu(t)$ which satisfy the conditions $\varphi_\nu(t^0) = q_\nu^0$, a one-parameter family of kinematically admissible motions $q_\nu = \phi_\nu(t,\alpha)$ can be always found which satisfy the conditions :

$$(1.4) \qquad \phi_\nu(t,0) = \varphi_\nu(t) \quad ; \quad \frac{\partial^2 \phi_\nu}{\partial\alpha\partial t} = \frac{\partial^2 \phi_\nu}{\partial t\partial\alpha}$$

Here α is an arbitrary parameter.
Moreover it is proved that, if the kinematically possible motions satisfy the conditions prescribed for the virtual displacements, the system of the coupling relations mentioned

above is completely integrable.
There are 5 non-Soviet references, 3 of which are German, and 2 French.

SUBMITTED: December 27, 1957

16.7000

77979
SOV/40-24-1-7/28

AUTHOR: Kirgetov, V. I. (Moscow)

TITLE: Relaxation of Physical Systems

PERIODICAL: Prikladnaya matematika i mekhanika, 1960, Vol 24, Nr 1, pp 39-46 (USSR)

ABSTRACT: The relaxation of a system of n particles subjected to conditions of the form

$$f_s(t, x_i, x_i') = 0 \qquad (1.1)$$

and virtual displacements δx_i which satisfy

$$\sum_{i=1}^{3n} \frac{\partial f_s}{\partial x_i'} \delta x_i = 0 \qquad (1.2)$$

is studied, and a generalization of Gauss' minimum principle is obtained. Here, x_i, $\dot{x}_i$, and $\ddot{x}_i$

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($i = 1,\ldots,3n$) are, respectively, the coordinates, velocity, and acceleration components of the particles. A system is regarded as being freer in a given state if, in that state, the manifold of accelerations which the system can actually take on is widened. Any transformation of the system which does not narrow the manifold of admissible states and makes the system in each given state freer is a relaxation of the system. With this point of view, it is then shown that if A is a system characterized by Eqs. (1.1) and (1.2), B is a system obtained by relaxing A, and if the virtual displacements of B include all the virtual displacements of A, then there holds a law of least variation of the actual motion of the system from the relaxed one. Because of Eq. (1.1), a system can be described in terms of generalized Lagrangian coordinates q_r and velocities p_s by means of Eq. (2.1)

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The a_i and b_i are assumed to be differentiable

$$x_i = a_i(t, q_1, \ldots, q_r), \qquad x_i' = b_i(t, q_1, \ldots, q_r, p_1, \ldots, p_s) \qquad (2.1)$$

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functions of all arguments. The analogous representation of a system obtained by relaxation is used to show that relaxation is always accompanied by a decrease in the number of equations of condition on the system. The author then obtains the following algorithm: To generate the relaxation of any physical system A, whose manifold of admissible states is given by Eq. (2.1), it is necessary to transform A in such a way that for the new system the manifold of admissible states is given by

$$x_i = A_i(t, q_1, \ldots, q_r, \xi_1, \ldots, \xi_{r'-r})$$

$$x_i' = B_i(t, q_1, \ldots, q_r, \xi_1, \ldots, \xi_{r'-r}, p_1, \ldots, p_s, \eta_1, \ldots, \eta_{s'-s}) \quad (2.16)$$

Here, ξ and η are supplementary independent parameters; r' and s' are the number of generalized coordinates and velocities of the relaxed system; and the functions A_i and B_i reduce to a_i and b_i, respectively, upon equating all ξ_i and η_i to zero. As a final point,

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the author shows that if a system and its relaxation are both characterized by Eqs. (1.1) and (1.2), the virtual displacements of the basic system will always be found among those of the relaxed system. There are 5 references; 1 German, 4 Soviet.

SUBMITTED: October 8, 1959

Card 4/4

KIRGETOV, V. I. (Moskva)

Absolutely elastic shock of material systems. Prikl. mat. i mekh. 24 no.5:781-789 S - O '60. (MIRA 14:3)
(Mathematical physics)

89382

S/040/61/025/001/001/022
B125/B204

24.4000

AUTHOR: Kirgetov, V. I. (Moscow)

TITLE: The theory of the absolute elastic impact of material syutems

PERIODICAL: Prikladnaya matematika i mekhanika, v. 25, no. 1, 1961, 3-8

TEXT: In the present work the absolute elastic impact in a system to which a unilateral condition is applied, is investigated. The author tries to find out the properties of the impact by determining the minimum of a function and then generalizes this theory to arbitrary smooth conditions. The n material points of the system investigated here are interrelated by smooth time-independent conditions $f_\alpha(x_1,\dots,x_{3n}) = 0$ (1.1). Here $x_1,\dots,x_{3n}$ are the coordinates of the points of the system with respect to a Cartesian system of coordinates at rest. (x_1, x_2, x_3 are the coordinates of the first point of the system, x_4, x_5, x_6 the coordinates of the second point, etc.). At a certain instant of time, the homogeneous condition $\varphi(x_1,\dots,x_{3n}) \geqslant 0$ (1.2) is imposed upon the system. An impact

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The theory of the absolute...

then occurs in the system, which is described by the equation $\sum m_i(v_i - v_{io})\delta x_i \geqslant 0$. Here m_i are the masses of the mass points of the system; v_{io} and v_i respectively are the velocities of the points of the system immediately before and after the impact. δx_i are the "possible shifts" of the system during the impact. Further, $\sum \frac{\partial f_\alpha}{\partial x_i}\delta x_i = 0$ and $\sum \frac{\partial \varphi}{\partial x_i}\delta x_i \geqslant 0$ hold. The jump-like changes in the velocities of the points, which are due to the impact, are described by $v_i - v_{io} = \mu R_i$ (1.3) with $\mu = 2\sum \frac{\partial \varphi}{\partial x_i} v_{io} / \sum m_i R_i^{*2}$ (1.4) and $R_i = \frac{1}{m_i}\left(\sum \frac{A_{\beta\alpha}}{A} \frac{\partial f_\alpha}{\partial x_i} a_\beta - \frac{\partial \varphi}{\partial x_i}\right)$ (1.5). The following theorem is set up: The actual state of the system after the impact satisfies the equation $\sum \frac{\partial \varphi}{\partial x_i} v_i = -\sum \frac{\partial \varphi}{\partial x_i} v_{io}$ (1.8) and differs from the other states by the conditions of the system and by the relations (1.8) and especially by the fact that $\sum m_i(v_i - v_{io})\delta x_i = 0$ (1.9) holds

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for any δx_i satisfying the conditions $\sum \frac{\partial f_\alpha}{\partial x_i} \delta x_i = 0$, $\sum \frac{\partial \varphi}{\partial x_i} \delta x_i = 0$ (1.10). The theorem is then proven and the following interesting conclusion may be drawn: If v_i and v_i^* describe the actual state of the system as well as the other states allowed by the conditions of the system and by (1.8) after the impact, $\sum \frac{m_i}{2}(v_i - v_{io})^2 \leqslant \sum \frac{m_i}{2}(v_i^* - v_{io})^2$ holds. For the actual state of the system, $\sum \frac{m_i}{2}(v_i - v_{io})^2$ thus is a minimum. If the condition imposed upon the system remains conserved after the collision, $u_i - v_i = \nu R_i$ with $\nu = -\sum \frac{\partial \varphi}{\partial x_i} v_{io} / \sum \frac{\partial \varphi}{\partial x_i} R_i$ (2.2) is found for the velocities of the system after the collision. The state of the system expressed by $v_i - u_i = \nu R_i$ satisfies the condition $\sum \frac{\partial f_\alpha}{\partial x_i} v_i = 0$, $\sum \frac{\partial \varphi}{\partial x_i} v_i \geqslant 0$ (2.4) after the impact, and therefore this state is real. If the two successive collisions assumed here are united to a single process, and by attaching physical importance to the latter, the following holds: The impact occurring in the system

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when a unilateral condition is applied to it consists of a sequence of two phases: In the first or inelastic phase, the impact is absolutely inelastic, and the reactions "accumulate", and in the second phase the system is freed from unilateral bindings explosion-like. The physical interpretation of the absolutely elastic impact holds for time-independent conditions, and if the condition imposed upon the system is expressed by a single inequality. However, the impact probably occurs in this manner also in the case of holonomic or nonholonomic conditions. The results derived in the first point of this paper hold also generally. There are 5 references: 4 Soviet-bloc.

SUBMITTED: October 10, 1960

Card 4/4

26726
S/040/61/025/003/003/026
D208/D304

244200 1327, 1191, 1344

AUTHOR: Kirgetov, V. I. (Moscow)

TITLE: An analytical method in the theory of pure elastic collision in material systems

PERIODICAL: Akademiya nauk SSR. Otdeleniye tekhnicheskikh nauk. Prikladnaya matematika i mekhanika, v. 25, no. 3, 1961, 407 - 412

TEXT: This work is a generalization of the author's method (Ref. 1: K teorii absolyutnouprugogo udara material'nykh sistem (On the Theory of Pure Elastic Collision of Material Systems) PMM, 1961, vol. XXV, ed. 1), or solution of collision in material system under restraint. The system considered consists of n particles of masses m_i, which are connected by

$$\sum p_{\alpha i} v_i + p_\alpha = 0 \tag{1.1}$$

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and it moves w.r.t. the stationary Cartesian reference frame ($m_1 = m_2 = m_3$ = mass of the 1st particle, $m_4 = m_5 = m_6$ = mass of the 2nd particle, etc.). At a given time, smooth constraints

$$\sum r_{\beta i} v_i + r_\beta \geqslant 0 \tag{1.2}$$

are imposed on the system, resulting in a collision and a discontinuous change of velocities of the particles. For an ideal collision (of zero duration) the fundamental equation of mechanics becomes

$$\sum m_i (v_i - v_{i0}) \delta x_i = 0 \tag{1.3}$$

where v_{i0} - velocities of particles before the collision and possible displacements satisfy

$$\sum p_{\alpha i} \delta x_i = 0, \qquad \sum r_{\beta i} \delta x_i = 0. \tag{1.4}$$

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However, the equations of collision together with Eq. (1.1) are insufficient for a complete description and their number is short by the number of equations (1.2). Hence, a different method is adopted here. A collision in a system described above is said to consist of two phases: 1) A passive phase when the collision is totally inelastic and an accumulation of reactions takes place. 2) A second phase when an impulsive release from the accumulated strain takes place. At the end of the first phase the system is described by

$$u_i - v_{i0} = \sum R_{i\beta} \mu_\beta, \quad R_{i\beta} = \frac{1}{m_i} \left(\sum \frac{A_{\gamma\alpha}}{A} b_{\beta\gamma} p_{\alpha i} - r_{\beta i} \right). \qquad (2.6)$$

where $R_{i\beta}$ satisfy

$$\sum p_{\alpha i} R_{i\beta} = 0, \quad \sum r_{\delta i} R_{i\beta} = - \sum m_i R_{i\delta} R_{i\beta}, \qquad (2.7)$$

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$a_{\alpha\gamma}$ and $b_{\beta\gamma}$ are given by

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$$a_{\alpha\gamma} = \sum \frac{1}{m_i} p_{\alpha i} R_{\gamma i}, \qquad b_{\beta\gamma} = \sum \frac{1}{m_i} r_{\beta i} p_{\gamma i}. \qquad (2.5)$$

$A = a_{\alpha\gamma}$ and $A_{\gamma\alpha}$ = algebraic minors of elements $a_{\alpha\gamma}$ of the determinant A, and μ_β is

$$\mu_\beta = - \sum \frac{C_\beta}{C} \left(\sum r_{\delta i} v_{10} + r_\delta\right). \qquad (2.10)$$

At the end of the second phase velocities v_i of the system satisfy a minimum of

$$\sum \frac{m_i}{2} \left(v_i - u_i - \sum R_{i\beta}\mu_\beta\right)^2 \qquad (2.11)$$

together with

$$\sum p_{\alpha i} v_i + p_\alpha = 0, \qquad \sum r_{\beta i} v_i + r_\beta \geqslant 0 \qquad (2.12)$$

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The stage of the system after the collision is given by

$$v_i - u_i = \sum R_{i\beta}\,\mu\beta \qquad (2.14)$$

where v_i satisfy

$$\sum r_{\beta i}\,v_i + r_\beta = -\sum{}' r_{\beta i}\,v_{i0} - r_\beta \qquad (2.15)$$

and elimination of intermediate velocities u_i from Eq. (2.14) and Eq. (2.6) gives the final formula

$$v_i - v_{i0} = 2\sum R_{i\beta}\,\mu_\beta. \qquad (2.16)$$

A theorem is then derived, which states that: From all possible states of a system competible with the restraints and satisfying Eq. (2.15), the state actually occurring after the collision will be the one, for which

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$$\sum m_i(v_i - v_{i0})\,\delta x_i = 0$$

will be valid for all δx_i satisfying

$$\sum p_{\alpha i}\,\delta x_i = 0, \qquad \sum r_{\beta i}\,\delta x_i = 0.$$

A corollary: Out of all possible states of a system compatible with the restraints and satisfying Eq. (2.15) this state will actually occur after the collision, for which the function

$$\sum \frac{m_i}{2}\,(v_i - v_{i0})^2$$

is a minimum. There are 3 Soviet-bloc references.

SUBMITTED: February 20, 1961

Card 6/6

KIRGETOV, V.I. (Moskva)

Theory of absolutely elastic impact of material systems. Prikl. mat. i mekh. 25 no.1:3-8 Ja-F '61. (MIRA 14:6)
(Impact)

KIRGETOV, V.I. (Moskva)

Method of analytic mechanics in the theory of absolutely elastic impact of systems of material bodies. Prikl. mat. i mekh. 25 no.3:407-412 My-Je '61. (MIRA 14:7)
(Mechanics, Analytic) (Impact) (Elastic solids)

ACCESSION NR: AP4013377 S/0040/64/028/001/0015/0024

AUTHOR: Kirgetov, V. I. (Moscow)

TITLE: Kinematically controllable mechanical systems

SOURCE: Prikladnaya matematika i mekhanika, v. 28, no 1, 1964, 15-24

TOPIC TAGS: kinematically controllable mechanical system, servo-system, parametric relation, Gauss principle, holonomic relation, control parameter

ABSTRACT: A kinematically controllable system is a mechanical system whose relations depend on certain parameters which can be arbitrarily given various values in the process of motion of the system. By suitably providing the program of change of these parameters depending on the flowing state of the system and time, one can provide the motion of the system with the desired properties. By nature, kinematically controllable systems are closely related to the servo-systems of Begen-Appel' (Teoreticheskaya mekhanika, t. 2, Fizmatgiz, 1960). Appel' notes the peculiarities of servo-systems in comparison with the systems usually studied in mechanics. The present author develops a different approach to such systems by treating them as controllable systems. He introduces the concept of parametric relation as the basic characteristic element of a kinematically controllable system.

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000722620004-8"

ACCESSION NR: AP4013377

He indicates also the relationships for the possible perturbations of the system and gives a modification of Gauss' principle for kinematically controllable systems. Orig. art. has: 23 formulas.

ASSOCIATION: none

SUBMITTED: 07Sep63 DATE ACQ: 26Feb64 ENCL: 00

SUB CODE: MM NO REF SOV: 001 OTHER: 001

Card 2/2

ACCESSION NR: AP4027583 S/0040/64/028/002/0232/0241

AUTHOR: Kirgetov, V. I. (Moscow)

TITLE: Equations of motion of controllable mechanical systems

SOURCE: Prikladnaya matematika i mekhanika, v. 28, no. 2, 1964, 232-241

TOPIC TAGS: equation of motion, controllable mechanical system, Lagrange equation, canonical equation, Appel equation, canonical transformation, holonomic system, parametric relation, D'Alembert-Lagrange principle

ABSTRACT: The author continues the study of controllable mechanical systems begun in his previous work (O kinematicheski upravlyayemykh mekhanicheskikh sistemakh. PMM, 1964, t. 28, vyp. 1.). He considers general problems of an analytic theory of controllable systems, showing that the equations of motion of a controllable system may be written in all basic forms: Lagrange equations, canonical equations, and Appel equations. He investigates canonical transformations of holonomic controllable systems and derives equations of motion of non-holonomic controllable systems. Orig. art. has: 43 formulas.

Card 1/2

ACCESSION NR: AP4027583

ASSOCIATION: none

SUBMITTED: 07Sep63

DATE ACQ: 28Apr64

ENCL: 00

SUB CODE: AI, MM

NO REF SOV: 001

OTHER: 001

Card 2/2

KIRGETOVA, V I

LEVIT, M.S., kand. tekhn. nauk; KIRGETOVA, V.I., inzh.; VOL'VOVSKAYA, Ye.A., inzh.

Contimuous refining of fats with soda ash. Mal.-zhir. prom. 24 no.2:32-34 '58. (MIRA 11:3)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut zhirov (for Levit, Kirgetova). 2. Mosgidrozavod (for Vol'vovskaya).
(Oils and fats) (Calcium carbonate)

Kirgintsev, A.N.

78-2-40/43

AUTHOR: Kirgintsev, A. N.

TITLE: On the Dependence of the Equilibrium Coefficient in the Crystallization on the Size of the Crystals (O zavisimosti koeffitsiyenta ravnovesnoy kristallizatsii ot razmera kristallov)

PERIODICAL: Zhurnal Neorganicheskoy Khimii, 1958, Vol. 3, Nr 2, pp.533-538 (USSR)

ABSTRACT: The author investigated the dependence of the equilibrium coefficient in the crystallization on the size of the crystals in co-crystallization. In this connection the following cases have to be distinguished:

1. In the solution exist no salts with identical ions. When c represents the concentration of a component, then

$$c = \bar{c} \exp\left(\frac{1}{m_1} \beta \frac{V_2}{RT}\right)$$

$$m_1 = n_1 + n_2 \qquad \frac{N_1}{c_1} = \frac{\bar{N}_1}{c_1} = \exp\left\{\frac{1}{n_1} \beta \left(V_2 \frac{n_2}{m_1} - V_1\right)\right\}$$

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From this equation follows that the small crystals occlude the microcomponents in a smaller quantity than the larger ones.

2. In the second case an excess of an anion exists in the solution.

$$\frac{N_1}{c_1} = \frac{\bar{N}_1}{\bar{c}_1} \exp\left(-\frac{1}{n_1}\beta\frac{V_1}{RT}\right)$$

From the equation follows that the small crystals carry along the microcomponents in a smaller quantity than the large ones. In the third case an excess of cations exist in the solution.

$$\frac{N_1}{c_1} = \frac{\bar{N}_1}{\bar{c}_1} \exp\left\{\beta\frac{1}{RT}\left(\frac{V_2}{n_1} - \frac{V_1}{n_1}\right)\right\}$$

From the equation follows that the carrying along of the microcomponents is not dependent upon the size of the crystals. The theoretical considerations with the taking into account of the above-mentioned three cases showed that adsorption and co-crystallization occur simultaneously in the co-crystallization of the microcomponents and that a difference between

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On the Dependence of the Equilibrium Coefficient in the Crystallization on the Size of the Crystals.

the two effects is difficult to determine. There are 6 references, all of which are Slavic.

ASSOCIATION: Institute of Physical Chemistry AS USSR (Institut fizicheskoy khimii Akademii nauk SSSR)

SUBMITTED: March 19, 1957

AVAILABLE: Library of Congress

Card 3/3

AUTHOR: Kirgintsev, A. N. 78-3-6-25/30

TITLE: On the Problem of the Distribution of Ions Between Solid and Liquid Phases (K voprosu o raspredelenii ionov mezhdu tverdoy i zhidkoy fazami)

PERIODICAL: Zhurnal Neorganicheskoy Khimii, 1958, Vol. 3, Nr 6, pp. 1447-1456 (USSR)

ABSTRACT: The application of the law of mass action in the distribution of ions between crystalline and solid phases meets with theoretical difficulties. The law of mass action does not take account of the kinetic effect taking place in the distribution of ions between solid and liquid phases.

The kinetic methods of the distribution of cations between solid and liquid phases for mixed crystals were investigated in the present paper. Some equations which are applied in connection with kinetic methods were applied also here.

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On the Problem of the Distribution of Ions Between Solid and Liquid Phases 78-3-6-25/30

$$\frac{N_1}{c_1} = b^{1/m_1} \left(\frac{k_1 c_a}{k_1 c_1 + k_2 c_2}\right)^{n_2/m_1} (N_{1o} - N_1)^{1/m_1},$$

$$b = \left(\frac{\alpha_{1o}}{\gamma_{1o}}\right)^{n_1} \left(\frac{\alpha_{a0}}{\gamma_{a0}}\right)^{n_2} \cdot \frac{k''}{k'},$$

$$m_1 = n_1 + n_2.$$

The equation gives the isotherms of the co-crystallization.

$$\frac{N_1}{c_1} = \left(\frac{a''_-}{a''_{1+} + a''_{2+}}\right)^{n_2/m_1} \frac{\gamma''_{1\pm}}{\gamma'_{1\pm}} \cdot \frac{1}{a_{1o}^{1/m_1}} (N_{1o} - N_1)^{1/m_1}$$

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On the Problem of the Distribution of Ions Between Solid and Liquid Phases 78-3-6-25/30

This equation gives the isotherms of co-crystallization in a general form. γ' and γ'' denote the activity-coefficients of the first component in the solid and liquid phases.

$$D = K'a''^{1-'}_{2^+},$$

$$K' = b' \frac{1}{\overset{''}{2}_{\pm}} (N_{1o} - N_1)^{1/m_1}$$

The equation of the isotherms of co-crystallization for the aggregations is similar to the first equation. Various data obtained experimentally can be explained by the proposed equations.
There is an analogy between co-crystallization and the phenomena of adsorption in processes of crystallization.

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On the Problem of the Distribution of Ions Between Solid and Liquid Phases 78-3-6 25/30

There are 2 figures and 11 references, 10 of which are Soviet.

ASSOCIATION: Institut fizicheskoy khimii AN SSSR (Institute of Physical Chemistry AS USSR)

SUBMITTED: March 19, 1957

AVAILABLE: Library of Congress

1. Solids--Ion distribution--Theory 2. Liquids--Ion distribution --Theory

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5(4) SOV/78-4-1-36/48

AUTHOR: Kirgintsev, A. N.

TITLE: The Kinetics of the Processes for Obtaining Equilibrium Distribution of the Microcomponent Between Solid and Liquid Phases (Kinetika protsessov dostizheniya ravnovesnogo raspredeleniya mikrokomponenta mezhdu tverdoy i zhidkoy fazami)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 1, pp 213-219 (USSR)

ABSTRACT: The equilibrium distribution between solid and liquid phase of the microcomponent was investigated for cases of real isomorphism and anomalous mixed crystals. A relation between recrystallization time and the quantity of the microcomponent in the precipitate was found by equations. The macrocomponent precipitates very quickly from the liquid phase. The distribution of the microcomponent between the solid and liquid phases precipitating within the time unit does not correspond to the thermo-dynamic equilibrium. The change of adsorption of the microcomponent at the solid phase with respect to time is shown in equation (4):

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The Kinetics of the Processes for Obtaining Equilibrium Distribution of the Microcomponent Between Solid and Liqui Phases

$\frac{dx}{dt} = k_2(1-x)-k_1x$ (4) x = amount of the microcomponent in the solid phase as fraction of its entire amount in the system. After some time equilibrium distribution of the microcomponent between solid and liquid phase takes place, as is shown in equation (5):

$\frac{k_2}{k_1} = \frac{x_\infty}{1-x_\infty}$ (5) x_∞ = amount of the microcomponent in the solid phase at equilibrium distribution. Three cases of the microcomponent equilibrium distribution between solid and liquid phase have been worked out. The equation of isomorphic substances is similar to the simple exponential law of exchange (equation 21):

$\chi t = -\frac{p \cdot c}{Dp+c} \ln(1-F)$ (21) χ = amount of the macrocomponent passing over from the precipitate surface per time unit.
t = time D = coefficient of equilibrium crystallization
p = constant F = portion of exchange c = amount of the microcomponent. A method of determining the coefficients of the

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The Kinetics of the Processes for Obtaining Equilibrium Distribution of the Microcomponent Between Solid and Liquid Phases

equilibrium crystallization from the first part of the curves in the x-t diagram was suggested. Equation (21) shows that the amount of time necessary for obtaining the microcomponent equilibrium distribution between solid and liquid phase not only depends on the character of the salts of the micro and macrocomponent but also on the quantity of the solid and liquid phase. There are 1 figure and 7 references, 6 of which are Soviet.

ASSOCIATION: Dal'nevostochnyy filial Akademii nauk SSSR (Soviet Far East Branch of the Academy of Sciences, USSR)

SUBMITTED: October 10, 1957

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KIRGINTSEV, A.N.

Application of Van der Waals' differential equation and Konovalov's laws to processes of equilibrial crystallization of binary solid solutions of ionic salts from aqueous solutions. Izv.Sib.otd.AN SSSR no.10:95-102 '59. (MIRA 13:4)

1. Institut neorganicheskoy khimii Sibirskogo otdeleniya AN SSSR. (Crystallization)

KIRGINTSEV, A.N.

Phase transitions in binary solutions. Izv.Sib.otd.AN SSSR no.11:38-49 '59. (MIRA 13:4)

1. Institut neorganicheskoy khimii Sibirskogo otdeleniya AN SSSR.
(Solutions (Chemistry))

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77087
SOV/62-59-12-31/43

AUTHOR: Kirgintsev, A. N.

TITLE: Brief Communication. Concerning the Analogy Between Two Types of Phase Equilibrium Diagrams

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 12, p 2236 (USSR)

ABSTRACT: The author draws an analogy between the binary system solution-vapor and the process of crystallization of ionic salts in aqueous solutions. Similarity of the two equations:

$$\mu_i = \mu_{i0} + RT \ln \gamma_i + RT \ln p_i; \quad (1)$$

$$\mu_i = \mu_{i0} + RT \ln \gamma_i + RT \ln L_i. \quad (2)$$

(where μ_1 is: in Eq. (1) chemical potential of the component i in the gaseous phase; and in Eq. (2)

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Brief Communication. Concerning the Analogy Between Two Types of Phase Equilibrium Diagrams

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chemical potential for ionic salts (of the composition $A_{n_1} B_{n_2}$ and $C_{n_1} B_{n_2}$) of the component 1 in the liquid phase; γ_1 is activity coefficient; p_1 is partial pressure;

$L_1 = c_1^{n_1} \cdot c_a^{n_2}$, where c_1, c_2, and c_a are concentration of the cations A and C, and of the anions B, respectively in the liquid phase. For crystallization of ionic salts, a value $L = L_1 + L_2$ can be introduced, analogous to the sum of partial pressures, $p = p_1 + p_2$.) suggests that there should be an analogy between the phase diagrams for both systems. Figure 1 illustrates this similarity, showing the phase diagrams (in which the value L in moles/ℓ, is plotted against solution composition in mole fraction) for several mixtures of ionic salts.

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Brief Communication. Concerning the Analogy Between Two Types of Phase Equilibrium Diagrams

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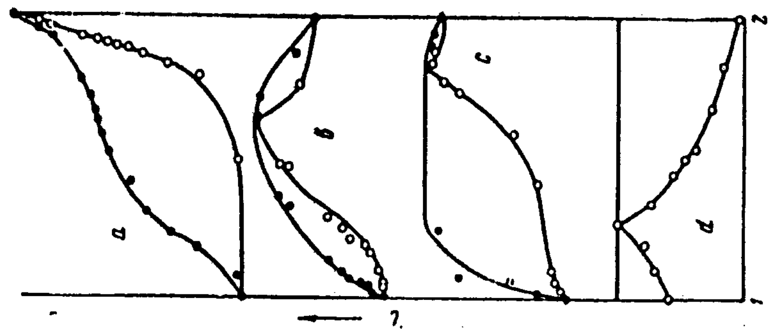

Fig. 1. Solubility diagrams: (a) 1—K_2SO_4; 2—$(NH_4)_2SO_4$ from the data of: (Belopol'skiy, A. P., Shpunt, S. Ya., Aleksandrov, N. P., Kaliy, Nr 3, 25 (1936). (b) 1—KCl; 2— KBr from: (Shlezinger, N. A., Zorkin, F. P., Zhur. Fiz. Khim., 13, 1502 (1939). (c) 1 — NaCl; 2 — NaBr from: Boeke , H., Z. Kryst. Mineral., 45, 366 (1908). (d) 1 — NaCl; 2 — KCl from: (Vol'f, F. F., Yatlov, V. S., Zhur. Priklad. Khim.,5, 838 (1928).

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Brief Communication. Concerning the Analogy Between Two Types of Phase Equilibrium Diagrams

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The lower curve(white circles) represents the composition of the liquid phase (mole fractions for the liquid phase were calculated without accounting for water), the upper curves represent composition of the solid phase. Yu. S. Kononov took part in calculations for this study. There is 1 figure; and 4 references, 3 Soviet, 1 German.

ASSOCIATION: Institute of Inorganic Chemistry, Siberian Section of the Academy of Sciences, USSR (Institut neorganicheskiy khimii Sibirskogo Otdeleniya Akademii nauk SSSR)

SUBMITTED: May 4, 1959

Card 4/4

5(4)

AUTHOR: Kirgintsev, A. N. SOV/76-33-4-10/32

TITLE: The Effect of Fluctuation on the Activity Coefficient of Binary Non-electrolytes Far from the Critical Temperature of Solution (Vliyaniye fluktuatsiy na koeffitsiyent aktivnosti binarnykh neelektrolitov vdali ot kriticheskoy temperatury rastvoreniya)

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 4, pp 813 - 821 (USSR)

ABSTRACT: The fluctuation of concentration plays an important part not only in critical phenomena, it may develop more strongly also in the range somewhat distant from the critical point (Refs 2-4). Two types of fluctuation in solutions must be distinguished: 1) the molecules form no aggregates in the state of fluctuation or 2) they form aggregates i. e. the molecule complexes which take part as a whole in the thermal movement form a particle. In the former case the number of particles is equal to the number of molecules and in the latter the number of particles is smaller than that of the molecules. This case is investigated in the present paper. The solution of two components is investigated and two states are distinguished in each type of molecule. 1) the true concentrations do not differ

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The Effect of Fluctuation on the Activity Coefficient SOV/76-33-4-10/32
of Binary Non-electrolytes Far From the Critical Temperature of Solution

from the intermediate concentration and 2) states of fluctuation of the molecules of the first and the second type with the transition-transposition work forming the difference with respect to the first case. Equations are derived (2) and (10) expressing the free energy of the solution which are employed for the analysis of the equilibrium conditions. The equilibrium of the solution with the gas phase is investigated for two states of the first component in the solution - the normal and the fluctuation state - and equation (30) for the activity coefficient (AC) under consideration of the fluctuation is obtained. The final equation (49) for the (AC) is obtained by further mathematical derivations by means of the Gibbs-Duhem equation which links the (AC) of a binary solution. The authors arrive at the well-known conclusion that regular solutions are only approximations and in fact are real solutions which practically may never be obtained as regular ones since the fluctuations are the main reason for the deviations of the properties from those of a regular system. A verification of equation (49) is not necessary since the derivations mentioned

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The Effect of Fluctuation on the Activity Coefficient SOV/76-33-4-10/32
of Binary Non-electrolytes Far From the Critical Temperature of Solution

are in good agreement with the equations according to Margules and Redlich-Kister. There are 10 references, 6 of which are Soviet.

ASSOCIATION: Akademiya nauk SSR Dal'nevostochnyy filial, Vladivostok (Academy of Sciences SSSR, Soviet Far East Branch, Vladivostok)

SUBMITTED: September 10, 1957

Card 3/3

KIRGINTSEV, Aleksey Nikolayevich; MIKHAYLOV, V.A., kand. khim. nauk, otv. red.; CHERNOVA, L.I., red.; LOKSHINA, O.A., tekhn. red.

[Mathematical theory of zone melting processes] Matematicheskaia teoriia protsessov zonnoi plavki. Otv. red. V.A.Mikhailov. Novosibirsk, Izd-vo Sibirskogo otd-nia AN SSSR, 1960. 69 p. (MIRA 14:8)

(Zone melting)

KIRGINTSEV, A.N.

Application of the molecular kinetic method to the theory of binary solutions of nonelectrolytes. Izv.Sib.otd.AN SSSR no.7:61-66 '60. (MIRA 13:8)

1. Institut neorganicheskoy khimii Sibirskogo otdeleniya AN SSSR. (Solutions (Chemistry))

KIRGINTSEV, A.N.

Lower limit of misci ility in heterogenous systems. Izv. Sib. otd. AN SSSR no.8:57-68 '60. (MIRA 13:9)

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Chemical potential in solutions of ionic salts. Izv. Sib. otd. AN SSSR no. 11:71-76 '60. (MIRA 14:1)

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Effect of fluctuations on the activity coefficient of binary solutions of nonelectrolytes near the critical temperature of solution. Izv. Sib.otd.AN SSSR no.12:62-66 '60. (MIRA 14:2)

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KIRGINTSEV, A.N.; GVOZDEV, B.A.

Cocrystallization of strontium and potassium chromates. Zhur. neorg. khim. 5 no.10:2374-2376 O '60. (MIRA 13:10)

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(Strontium chromate) (Potassium chromate)
(Crystallization)

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"Principles of Radiochemistry" by I.E. Starik. Reviewed by A.V. Nikolaev, A.N. Kirgintsev, V.A. Mikhailov. Zhur. neorg. khim. 5 no. 12:2854-2857 D '60. (MIRA 13:12)

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"Isothermal" method of relieving supersaturation in the study of the cocrystallization of mixed crystals. Zhur. neorg. khim. 6 no.3:751-753 Mr '61. (MIRA 14:3)

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(Crystallization)(Solutions, Supsersaturated)

KIRGINTSEV, A.N. ; YEFANOV, L.N. ; BURLAKOVA, N.I.

Studying transitions of a stable state into a metastable state.
Izv.Sib.otd.An SSSR no 2:39-42 '61 (MIRA 14:3)

1. Institut neorganicheskoy khimii Sibirskogo otdeleniya AN SSSR, Novosibirsk.

(Phase rule and equilibrium)

KIRGINTSEV, A. N.

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Lower limit of miscibility in cocrystallization processes. Izv. Sib. otd. AN SSSR no.9:69-77 '61. (MIRA 14:10)

1. Institut neorganicheskoy khimii Sibirskogo otdeleniya AN SSSR, Novosibirsk.
(Crystallization)

KIRGINTSEV, A.N.; YEFANOV, L.N.; BURLAKOVA, N.I.

Surface tension of aqueous solutions of salts after polymorphous transformations in the solid state. Izv. Sib. otd. AN SSSR no.11:75-79 '61. (MIRA 15:1)

1. Institut neorganicheskoy khimii Sibirskogo otdeleniya AN SSSR, Novosibirsk.

(Solution (Chemistry))
(Surface tension)

KIRGINTSEV, A.N.

Fluctuation model of a binary solution. Izv. Sib. otd. AN SSSR no.2:43-52 '62. (MIRA 16:10)

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KIRGINTSEV, A.N.; TUL'SKIY, A.S. [deceased]

Mathematical calculation of the processes of separation by zone melting. Izv. Sib. otd. AN SSSR no.5:121-126 '62. (MIRA 18:2)

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Water vapor pressure in the system water - glycerol at 25 C.
Izv.AN SSSR.Otd.khim.nauk no.8:1479-1481 Ag '62. (MIRA 15:8)

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(Glycerol) (Water vapor)

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Equations of fusibility curves for simple binary systems.
Izv. Sib. otd. AN SSSR no.[illegible] '62. (MIRA 17:8)

1. Institut neorganicheskoy khimii Sibirskogo otdeleniya
AN SSSR, Novosibirsk.

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AUTHORS: Kirgintsev, A.N., and Avvakumov, Ye.G.

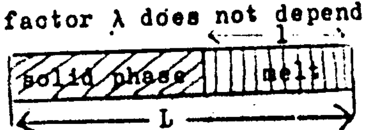
TITLE: Investigation of the capture of nonisomorphous impurities by a growing crystal from the melt

PERIODICAL: Fizika tverdogo tela, v. 4, no. 12, 1962, 3427-3434

TEXT: It is shown that during the growth of an ingot at constant rate in one direction, the impurity distribution can be described by

$$y(p) = \lambda(p)\frac{1-\frac{c_2'}{c_{20}}}{1-p}, \qquad p = 1-\frac{l}{L}, \qquad y(p) = \frac{\Delta c_2'}{\Delta c_1'}\frac{c_{10}}{c_{20}},$$

or, if the equilibrium separation factor λ does not depend on the concentration, by $y(p) = \lambda(1-p)^{\lambda-1}$.



λ is determined from the relation $\lambda = 1 - \exp(-Bv)$ where B is defined by the type of impurity and the intermixing of the melt; v is the rate of growth of the crystal. Here, c_1' and c_2' are the amounts of basic substance and impurity in

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